

1 for our coordination process.

2 MR. LYNCH: But there was an impetus
3 for doing that. Right? Okay. But in the other
4 case, there was no impetus. In fact, there was in
5 various international organizations at the time the
6 U.S. government was opposing the use of that band
7 for that purpose too.

8 MR. FRANCA: I think, Lauren, if I
9 might just comment on that, because I think that
10 happens. And I think these are issues that while
11 the equipment is being developed for a foreign
12 market, there also was petitions to use that
13 spectrum, or transfer some of the spectrum
14 domestically. And I think you -- you know, in
15 those cases, I think we can understand what the
16 government side might be concerned about, where an
17 experiment might lead, and be more cautious about
18 approving that.

19 I will say that in general, you know, I
20 mean we have very good relationships with NTIA.
21 They understand the experimental program doesn't
22 promise anything, and generally, I think we're able
23 in most instances, unless there are some real
24 interference concerns or other issues to work
25 things out. Although, it does in some instances

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1 take a little bit of time.

2 DR. LUCKY: Bruce, could I ask you or
3 Lauren, you know, I don't know very much about
4 experimental licenses. I've gotten them at Bell
5 Labs in the past, and used them and so forth, but
6 who actually has authority in these cases? I mean,
7 does it really -- who really makes the decision?
8 You say you coordinate with NTIA, but sometimes it
9 goes to IRAC and, you know.

10 MR. FRANCA: Right. I mean, we issue
11 the license, and the application comes to us, but
12 we -- if it's an exclusive government band, we
13 coordinate that, just like we would if, for
14 example, somebody wanted to use the broadcast band
15 and there was an interference issue. We may make a
16 determination that that experiment doesn't make
17 sense in that particular geography, and we rely on
18 the government's eye to kind of make those same
19 determinations.

20 DR. LUCKY: I'm not sure I understand
21 the word "coordinate." I mean, if NTIA says no, I
22 mean, the answer is no?

23 MR. FRANCA: Generally, the answer is
24 no in their spectrum, or we might ask them why.
25 You know, and offer some advice to the licensee

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1 about going another place.

2 MR. HILLIARD: You know, that exchange
3 that we just heard prompts the thought that in this
4 process, particularly for the non-routine
5 applications, we really need to build in dialogue,
6 because in many cases, I think things can be worked
7 out. But so often times, experimental licensing
8 has sort of been in the background, and sometimes
9 deemed not to be very important by management, when
10 in fact, it's the seed bed from which a lot of
11 things flow. And resources haven't been put upon
12 it to get people into Washington to have the
13 discussions with the right folks at NTIA, and if
14 necessary, even in other government agencies. So
15 the model, if you wanted to construct one,
16 currently is pretty good. It works very well for
17 routine things. They've done an excellent job
18 there, but for things that are not routine, and you
19 can expect non-routine sort of situations right
20 here. There needs to be a lot of dialogue, and it
21 may mean that Bruce ends up spending more time than
22 he wishes talking to Washington folks and others
23 about experimental licenses.

24 MS. VAN WAZER: I just want to remind
25 the speakers to speak into the mike. I guess some

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1 folks at the back of the room are having trouble
2 hearing us. David, you mentioned something about
3 wanting to build on the dialogue. What specific
4 ideas do you have with regard to that?

5 MR. HILLIARD: Well, I think that one
6 of the first things you need to think about before
7 you apply for an experimental license is what
8 interest might this affect? And if it's something
9 that could be controversial, that calls for some
10 discussions first at the FCC, to find out, you
11 know, where the stakeholders might be. And then
12 once you learn who those players are, go to them
13 and talk with them. Especially when we're having a
14 situation involving operation in spectrum that
15 requires coordination with the government. And,
16 you know, if you hit a brick wall right there, well
17 that says something about the process and its need
18 for reform. But my experience has been that if you
19 keep going at it, you can usually find somebody who
20 will talk with you about those sorts of problems.

21 The difficulty is that sometimes these
22 authorizations are actually needed fairly quickly.

23 And when you get into that situation, then things
24 become a little big rugged.

25 MR. LYNCH: And just, you know, going

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1 back to comments about, I think I heard a veiled
2 reference to some discussions on three and a half
3 gigahertz we have over the last several years. I,
4 from a purely experimental point of view, if it's
5 sensitive because somebody thinks it's going to go
6 towards a possible allocation, I could see an
7 agreement in the very beginning, I mean, if we had
8 some sort of process check sheet, if you would,
9 that this is not an application for an experimental
10 -- for export technology and not for the purposes
11 of doing a reallocation, and having it clearly
12 understood at the time that the request is even
13 made, it may help reduce the tension for some
14 people.

15 MS. VAN WAZER: Well, many of the
16 comments have been about the process. I guess I
17 want to step back a bit and say if our goal is to
18 promote innovation through the use of experimental
19 licenses, how could we do better substantively?

20 MR. SOLOMON: I think one way the
21 Commission really needs to get out to the public
22 and talk about experimental programs, and encourage
23 people to do that. You have almost two groups of
24 people. You have one that are sort of a vested
25 industry interest that have a lot of money to

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1 spend. Well, these days they don't have a lot of
2 money to spend, but let me just say that they
3 understand the process. They know how to work, at
4 least a little bit through the FCC. They
5 understand the process.

6 On the other hand, you have some very,
7 I think, brilliant people out there who just don't
8 understand the FCC, don't know about the FCC, are
9 frightened to death about the FCC's processes, and
10 just don't know what to do. And while I don't have
11 any great ideas today, I think the FCC really does
12 have to make an effort to get out there to the
13 public, to call for innovation, to try to get
14 people excited about doing experimentation in
15 radio. And I think these days it's particularly
16 important because a lot of the venture capital
17 money has certainly dried up. The
18 telecommunications market isn't doing exceedingly
19 well, and there has to be some incentive to do
20 experimentation.

21 DR. LUCKY: You know, I -- this morning
22 we focused on how to get new technology and, you
23 know, there are a lot of things, cognitive radio,
24 software-defined radio and so forth, and how we can
25 fit them into the mainstream, how we can slide them

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1 into it. And to the degree that experimental
2 licenses can be used for that, I would be very
3 interested. And I know, Paul, you had some
4 experience with ultra wideband. Now that's a
5 specific example of a dramatic new technology that
6 interferes with current technologies. How do you
7 ever get going with something like that? What was
8 your experience?

9 MR. ROOSA: The hardest part we had
10 with that is understanding what the technology
11 could do in the way of wave forms and technical
12 characteristics, and what affect the signals would
13 have on existing operators. We went into a
14 measurement program and measured a number of
15 different ultra wideband devices.

16 DR. LUCKY: Now the "we" here is the
17 NTIA. Right?

18 MR. ROOSA: Indeed. I'm sorry. NTIA,
19 and with -- our facilities out in Boulder did
20 that, the measurement effort. Still felt pretty
21 comfortable we understood what the spectrums looked
22 like, and how the energy that came out of the ultra
23 wideband device would affect conventional
24 receivers.

25 At that point, one has to make some

1 kinds of assumptions about what the transmitters
2 and the receivers may do, and where they may be
3 located relative to each other, and how to control
4 that. And I'd hesitate to say we're any further
5 than about halfway through the processes figuring
6 out what to do about ultra wideband devices.

7 DR. LUCKY: So it's neither here nor
8 there.

9 MR. ROOSA: I'm sorry. I don't
10 understand.

11 DR. LUCKY: Well, I mean, the problem
12 is how you get going on these things. I think the
13 FCC actually has acted fairly wisely in permitting
14 some experimental use of this, and liberalizing
15 what can be done, without going the full step
16 forward, and just freeing it out. But right now
17 it's sort of in a halfway house. Certain uses are
18 allowed, certain others are not.

19 MR. ROOSA: Yes, that's true. The
20 difficulties are, of course, that you don't know
21 where across the spectrum from about 100 megahertz
22 to many -- three or four gigahertz these systems
23 might be used. And it's very difficult to
24 determine how to operate compatibly with the folks
25 and the environment. It's certainly a technology

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1 that the government is excited about, and is
2 probably is as big a user as anybody else, if not
3 bigger, of different forms of ultra wideband
4 technology. So it's not that we're opposed to it,
5 it's that we want to be sure we know how we're
6 dealing with it.

7 I think that brings up some of the
8 issues that you've been talking about, perhaps this
9 morning, about the rights that come along with an
10 assignment. How do you ensure that a person who
11 has an assignment can exercise his rights, if
12 that's the proper word. And whether they are,
13 indeed, rights. Maybe they're just a temporary use
14 of the spectrum that should be subject to
15 withdrawal under many circumstances. I'm not
16 prepared to decide how the circumstances could be
17 organized though.

18 MS. VAN WAZER: Does anyone else have
19 comments on how we can better promote innovation
20 through possible changes in the rules, or provide
21 incentives for innovation?

22 MR. HOARTY: The Dotcast technology is,
23 of course, different from the problems with
24 military but it's a similar situation. We've
25 developed a high speed data sub-carrier that we add

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1 to television broadcasts, and this has been around
2 before. As many know in the 1990s, the software-
3 defined radio, been able to do it at very high
4 speeds. But because the television band,
5 apparently a lot of people watch television and the
6 broadcasters care about that, and it makes it
7 tricky to define what is interference. And, of
8 course, that's the topic of, I believe, Monday's
9 panel, and I certainly don't want to segue into
10 that, but that goes hand-in-hand with the
11 experimental license, is experimental license
12 issues. And that is what is important to -- it's
13 important to define what is host impairment, what
14 is impairment to the adjacent. And although there
15 are rules that very clearly articulate that, many
16 of them are crafted during the period of the 6th
17 report and order back in the 50s. And it's just a
18 little bit difficult when you're testing in an
19 area so crowded and near and dear to the broadcast
20 community.

21 Many of the problems, we've sought and
22 received two experimental licenses. One in
23 Scottsdale, Arizona, and we had that for a little
24 over a year, and with a kind extension -- at the
25 Commission at the time, one year was the period,

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1 and that was tough. Then we moved -- we opened a
2 research facility in Seattle and needed an
3 experimental there, which we still have, on channel
4 61. And again, you addressed many, as you opened
5 in, Lauren, the issue of moving to five years
6 blanket license. That helps a lot in just being
7 able to get through the research and development.
8 And it is -- timing is critical in the time span,
9 so I think those issues that we originally had are
10 gone as far as the duration and where.

11 I believe there's the ability to have
12 more than one license now, or more than one
13 frequency is part of the blanket license, so I'd go
14 back to saying that perhaps this should be reserved
15 for Monday's panel, but what defines interference?

16 It's so crowded out there, you can almost do
17 nothing, as they were just mentioning with the
18 ultra wideband, as to what can you do, and how do
19 you operate in this incredibly crowded RF spectrum?

20 DR. LUCKY: Well, some of us aren't
21 going to be here Monday, so if you could -- you
22 know, I think you could say something about the
23 issue of interference. It's pretty critical here.

24 I mean, that's what's really being used to decide
25 this.

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1 MR. HOARTY: Exactly. I think that's
2 exactly --

3 DR. LUCKY: You know, is are you going
4 to interfere with somebody? And so the question is
5 how does one make that determination?

6 MR. HOARTY: And this is -- again, just
7 looking at the notes for Monday's meeting, the
8 issue is, if you lower the link budget of somebody
9 else by a decibel, but the receiver doesn't notice
10 it yet, is that important? How do you tell? It's
11 a hard problem.

12 With television, it's somewhat more
13 straightforward. If the consumer gets a lousy
14 picture, obviously, you can't be messing around
15 anywhere around that frequency. But then there's
16 the issue with DTV where we're seeing analog, NTSC
17 channels by putting up a fair amount of energy in
18 the upper adjacent and causing threshold effects
19 that weren't anticipated. Adding our data carrier
20 to NTSC has been a question. Matter of fact, I'm
21 here regularly meeting on that issue of exactly
22 what does that cause, by adding yet a different
23 configuration to NTSC while we're trying to bring
24 up the DTV stations. So I don't know how to answer
25 the question, but it certainly needs to be clearly

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1 examined.

2 DR. LUCKY: David.

3 MR. REED: Since the big elephant in
4 the room maybe hasn't been fully addressed because
5 nobody who is involved in the UWB stuff seems to be
6 able to talk about it other than obliquely, let me
7 ask the following question, which I think I
8 understand.

9 In the UWB proceeding, it was alluded
10 out at the conference in Boulder where some of the
11 technical results were presented, that in fact, the
12 biggest problem in that proceeding, which among
13 other things put at least one start-up out of
14 business, the one that I was involved in the early
15 days before it was founded. What apparently
16 happened was that the -- certain individuals on the
17 IRAC took positions that they were unwilling to
18 disclose the basis for in public.

19 It seems to me that without
20 transparency, and whether the government owning so
21 much of the spectrum, we're going to continue to
22 have that problem, and it's going to hurt -- you
23 know, it's going to basically mean that anybody who
24 either competes with the government, or might have
25 a better use for the spectrum than the government,

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1 or might even be developing technology that would
2 ultimately benefit the government, has an extremely
3 high burden to bear of many years of delay, if
4 nothing else, while they try to work through a non-
5 transparent system.

6 So I guess I'm curious why, you know,
7 nobody's referring to this as, you know, publicly
8 and, you know, anybody who's not, you know -- does
9 not work for NTIA or the FCC might want to comment
10 on that, if no one else is willing to.

11 MS. VAN WAZER: I had a comment on
12 that.

13 DR. LUCKY: Well, let me ask, though,
14 the people who do work for the FCC and NTIA, do all
15 the applications go to the IRAC?

16 MR. ROOSA: For what variety of
17 devices? I mean --

18 MR. FRANCA: If I might. I mean, it's
19 only those devices, or only those experiments that
20 would basically be operated in government spectrum
21 or shared spectrum.

22 DR. LUCKY: So for example, in ultra
23 wideband, since it cuts across everything, it
24 automatically goes there.

25 MR. FRANCA: It automatically goes

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1 there.

2 DR. LUCKY: And they have veto power?
3 You keep dodging this issue. I mean, do they or do
4 they not? You keep talking about coordination, and
5 stuff like that.

6 MR. FRANCA: Well, we theoretically --
7 you know, I think that's somewhat of an open
8 debate. I think, you know, it's --

9 DR. LUCKY: I'm glad to hear you say
10 that.

11 MR. FRANCA: It's an application that
12 comes to the FCC. The FCC can basically grant it,
13 and the Commission could have, for example, adopted
14 rules. I know, I've been here a fairly long time,
15 and I can certainly cite instances where the
16 Commission basically said thank you very much for
17 your advice to NTIA, and did just the opposite of
18 what NTIA recommended.

19 DR. LUCKY: But we're talking about the
20 IRAC. I mean, do they do the same thing that David
21 Reed was alluding to? Do they tell the FCC no,
22 don't do this, but we're not going to tell you why?

23 MR. ROOSA: The IRAC is our advisors,
24 not the advisor to the Commission, so the IRAC
25 provides whatever their wisdom tells us is the

1 appropriate advice to us, and we either, at NTIA,
2 accept it and relay it to the Commission, or change
3 it.

4 It has occurred, from time to time, and
5 ultra wideband is one of the times where the
6 federal agencies were concerned enough about the
7 issues that they made some direct discussions with
8 the folks at the Commission. And I have a little
9 problem with the business about the untransparency
10 of the IRAC positions. I believe they were very
11 transparently stated in the record, so I'm not
12 really sure what you're talking about.

13 MS. VAN WAZER: Since we've got lots of
14 engineers in the room, and I think everybody is
15 familiar with statistics, I'm going to throw a few
16 statistics out, which actually might provide some
17 insight on really --

18 MR. REED: Actually, I was holding onto
19 the mike only for the reason of asking one more
20 question which related to your thing, which is that
21 it's my understanding that the IRAC also played a
22 very significant role in effecting the original
23 Part 15 change that enabled spread spectrum. And
24 that clearly was not an interference with a
25 military use or government use. I'm curious why

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1 that was.

2 MR. FRANCA: Actually, there was --
3 they do operate in some shared bands.

4 MR. HILLIARD: 902 to 928 is a shared
5 band.

6 MR. FRANCA: It's a shared band.

7 MS. VAN WAZER: Since we've had some
8 reference to the IRAC process, and the NTIA
9 coordination process with FCC, I'd like to throw
10 out these statistics so you get a sense of really
11 the issue.

12 Last year, there were approximately
13 90,000 authorizations, and there were 50
14 Commission-level items that were coordinated. And
15 we've only heard about a handful, so it really
16 isn't -- if you look at those statistics, it's not
17 as much of an issue. I mean, basically, the issues
18 are tough, and the ones you hear about are the ones
19 that are the nature of the beast. They're
20 difficult, but we have a lot of items that sail
21 through and have a good process.

22 MR. BUCHWALD: I could add to that,
23 that I've gone through four experimental licenses
24 in the last 24 months, and one of them involved
25 development of a product with our semiconductor

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1 group, that needed to be tested in a 1452 to 1492
2 band. And as compared to two other development
3 projects we had at 790 to 806 and 3.65 to 3.7 gigs,
4 which sailed through the Commission quickly, one of
5 them required us to simply state that we would be
6 developing this for external sales, offshore sales,
7 and the other required that we coordinate with the
8 Society of Broadcast Engineers. They sailed
9 through very quickly.

10 The 1452 to 1492, though, we did hit
11 some pretty good stumbling blocks, even though 300
12 miles from our location, the Canadians were
13 transmitting away in that band for URICO 147. We
14 ultimately did get through that, but I think a lot
15 of times you don't hear about the problems, because
16 we don't want to, you know, sort of bring those
17 issues up, you know, for future licensing. We
18 don't want to ruffle the feathers, I guess, as it
19 may.

20 DR. LUCKY: We had three people in the
21 back that wanted to talk. Is there a microphone?

22 MR. KOBBS: Thanks. Ben Kobb, a
23 consultant. I have a couple of recommendations for
24 the experimental licensing process, having spent
25 quite a bit of days recently writing a how-to use

1 the experimental licensing system for mere mortals,
2 so when my clients start to use the system will see
3 how well I did.

4 I was surprised to find out in
5 discussions with the experimental licensing staff
6 that, apparently, there is a policy, or there is
7 said to be a policy, that they cannot make
8 recommendations on amendments to the application.
9 For example, if the applicant proposed a frequency
10 or a set of frequencies, and these frequencies
11 could not be granted, for whatever reason, and yet,
12 perhaps some adjacent frequency or some other minor
13 amendment might be possible to enable the grant,
14 the staff could not recommend that. They couldn't
15 specify an alternative frequency that would
16 accomplish the objective because, I was told, that
17 would be competing with the private sector, and
18 that the private sector has consultants who makes
19 these kinds of recommendations.

20 Well, I'm in the private sector. My
21 client is in the private sector, and I don't see
22 any reason why, if there was some relatively minor
23 switch of a frequency or some kind of minor
24 amendment, why it couldn't be recommended.

25 The other thing is, I'd be curious if,

1 over the years in the experimental radio service,
2 if allocations to that service had ever come up? I
3 think it would be a marvelous idea. I have to
4 explain to my clients that of all the radio
5 services, the experimental service has no frequency
6 allocations. You have to pick the frequency, and
7 you better be right, because the staff won't
8 correct you if you're wrong. They'll just decline
9 it. But even one megahertz somewhere in the
10 spectrum could be useful. Nothing else has to
11 change the temporary nature of the license, but
12 this could ease a lot of the process.

13 The clients I've been working with
14 might well be able to use an allocation somewhere
15 that isn't being used right now, wherever it might
16 be in the spectrum, so it's something to consider.

17 DR. LUCKY: Okay. Dewayne, you wanted
18 to say something too. Pass the mike over there.

19 MR. HENDRICKS: Dewayne Hendricks,
20 Dandin Group. A few comments. First, I want to --
21 Part 5 is great. I mean, it's great that this
22 country has it. It's done a lot of good, so I
23 wanted to state that first, and that there's a lot
24 of countries that don't have it. Like Japan, for
25 instance, and they suffer for not having it, in my

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1 opinion.

2 Next comment. I was involved in STA
3 involving spread spectrum back in 1993. This was
4 for the amateur radio service, Part 97. And we
5 wanted the authorization to do anything we wanted
6 with spread spectrum from 50 megahertz up to light
7 in terms of all the existing amateur allocations,
8 so we weren't asking for any new allocations. We
9 were just saying we wanted to use spread spectrum
10 in creative ways within the existing amateur
11 allocations.

12 The application went to the Commission
13 and they took it to the IRAC. Okay? It took a
14 year to go through the IRAC and come back approved.

15 Now we got a one year STA, and so we went through
16 this process three times. It goes to IRAC, one
17 year, comes back. It was very frustrating, and
18 again, so there's been a number of comments about
19 the IRAC. And I would just add from my experience,
20 is that there is this black hole. Okay? And once
21 it goes in there, you don't know what's going to
22 happen or what. And that really hurts this
23 process, the uncertainty.

24 And I would urge the Commission to work
25 out some way to deal with this. And I understand

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1 it's only a few exceptional applications but look,
2 we're -- from the panel this morning, we're moving
3 into the area where we're getting a lot of new
4 technologies coming down the pike. Okay? And the
5 experimental process, Part 5 is the first step on
6 the road to getting a product to market, so you've
7 got to do whatever you can to make the process
8 faster, and a lot less uncertain. Okay?

9 My final comment has to do with, the one
10 thing you can't do with an experimental license is
11 sell your stuff, sell your product. And that you
12 can't test the product in a real market. Okay? I
13 think this is a deficiency which has caused my
14 company to go to other countries to -- where
15 there's an ability to do what you can do under
16 experimental licenses, use a lot of the spectrum,
17 but also have a market to test the product in, and
18 sell it, and see whether or not the thing is going
19 to work or not, you know, or survive. So that's
20 one thing that's missing. And, in fact, I'm
21 working with the Japanese Ministry of Economy,
22 Trade & Industry, to look at this notion for, you
23 know -- because they don't have an experimental
24 license, but they're thinking about taking the
25 island of Okinawa and turning it into what they're

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1 calling "Otokua", a radio haven, where they would
2 have an experimental license capability, but with
3 the addition of having a market so you could sell
4 anything into that market and see whether or not it
5 flew or not. Those are my comments.

6 DR. LUCKY: The license still limited in
7 time though? I mean, you sell a product that would
8 expire after a year?

9 MR. HENDRICKS: Or maybe three years, but
10 some fixed period of time.

11 DR. LUCKY: I just picture this radio
12 that's got a label that says expires after a year.

13 I mean, does this really test the market?

14 MR. HENDRICKS: Well, where I come from
15 product lives are like 18 months these days, so
16 that's not --

17 DR. LUCKY: Yeah, but there's no label
18 that says that. We just sort of know it.

19 MR. HENDRICKS: That's right.

20 MR. HOARTY: I think an example of where
21 that would apply, I was thinking about that very
22 issue, that you can't sell something that expires
23 per se, but in our case, we're testing on an
24 experimental frequency in a television band. Our
25 product is designed to grab any frequency that has

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1 our data carrier embedded in it, so we actually
2 could test on our own experimental station in a
3 market condition, because the device would continue
4 to function.

5 Now you get down to timing and the issue
6 of how impatient the investors are, and which is --
7 it goes hand-in-hand with that ability to test in
8 a commercial manner. In other words, you have to
9 be pretty sure of your timing, that you're going to
10 have a product or you're going to have
11 authorization, or with extending the experimental.

12 But there are instances where I could see where
13 you could test, and it would be really beneficial
14 to know how, if the -- you know, the dogs ate the
15 dog meat, as they say, before you take the thing to
16 market.

17 MS. VAN WAZER: Bruce, would you like to

18 --

19 MR. FRANCA: Yeah, let me -- I'd like to
20 just respond to at least -- actually, to both Ben,
21 and to Dewayne. One, on certainly -- well, we
22 don't do engineering work for folks. We certainly,
23 when people come in here, will talk to them, and
24 certainly offer advice, you know, when it's
25 appropriate. And certainly, we're more than

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1 willing to do that. We've done that on a number of
2 occasions where, you know -- and there are
3 coordination problems that go beyond just the
4 government. I know we've certainly solved some of
5 those.

6 With regard to the market test, the rules
7 do allow, under Part 5 do allow limited market
8 test. We do care very much about protecting the
9 consumer at the end of the day, and so there's
10 generally restrictions on ensuring that whoever has
11 the license retain ownership of all the equipment,
12 you know. But you charge and we've had, you know,
13 market tests going on for several years, you know,
14 so that people can decide whether a service, what
15 data rates are appropriate, what pricing should be
16 done, so we do allow that under the rules right
17 now.

18 MR. HILLIARD: The rules actually have
19 the flexibility to allow the Commission to permit
20 the sale. I haven't seen that happen, and I can
21 understand that there would be some significant
22 concerns about allowing that to happen. But I
23 could also imagine that it's possible to posit
24 circumstances where those concerns could be
25 answered.